

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF THE CLAIMS

1-32. (Cancelled).

33. (Currently Amended) A bolt and anchor assembly for securing a mine roof bolt, comprising:

~~an elongated bolt;~~

a shell ~~annularly~~ disposed on said bolt;

an expansion member axially disposed on said bolt adjacent one end of said shell for expanding said shell to anchor said elongated bolt in an associated bore hole; and

a support device axially disposed on said bolt adjacent another end of said expansion shell, engagement between said support device and said shell sequentially (1) forces said shell into said expansion member to expand said shell to anchor said ~~elongated~~ bolt in said associated bore hole while said support device remains axially fixed relative to said shell and (2) then after said bolt is anchored in said associated bore hole allows axial movement of said support device in a direction toward and relative to said shell.

34-42. (Cancelled).

43. (Previously Presented) An expansion shell assembly, comprising:

an elongated bolt;

an expansion shell having an aperture for receiving the elongated bolt;

an expansion member disposed on one end of the elongated bolt for expanding the expansion shell; and

a shell support in contact with the elongated bolt and the expansion shell, the shell support generally maintaining the axial position of the expansion shell relative to the elongated bolt while the expansion member forces the shell to engage a rock formation and moving axially relative to the expansion shell when the elongated bolt is tensioned after engagement to the rock formation.

44-45. (Cancelled).

46. (Previously Presented) A method for anchoring and tensioning a mine roof bolt with an expansion shell assembly in a drilled hole, the expansion shell assembly including an expansion shell disposed on the mine roof bolt, an expansion member disposed on the mine roof bolt adjacent one end of the expansion shell for expanding the expansion shell and a support member disposed on the mine roof bolt adjacent another end of the expansion shell for supporting the expansion shell while the shell expands and tensioning the mine roof bolt after the shell expands, the method comprising:

inserting and advancing said mine roof bolt with said expansion shell assembly carried thereon into a drilled hole in a rock formation;

rotating said mine roof bolt to anchor said expansion shell assembly in said drilled hole with said support device axially fixed relative to said expansion shell; and

further rotating said mine roof bolt, after said step of rotating said mine roof bolt to anchor said expansion shell assembly in said drilled hole, to tension said mine roof bolt with said support device axially moving in a direction toward said expansion shell.

47-48. (Cancelled).

49. (Currently Amended) An expansion shell assembly for mine roof bolts, comprising:

an expansion member threaded onto an associated bolt;

a support device annularly disposed around the associated bolt; and

a shell annularly disposed on the bolt between the expansion member and the support device, the expansion shell having a base ring with a tapered surface for mating engagement with a corresponding tapered surface on the support device and fingers for engaging the expansion member, wherein said mating engagement between said base ring and said support device allows axial movement of said support device into and through said base ring of said shell for tensioning said associated bolt after said fingers of said shell are expanded by said expansion member.

50. (New) The bolt and anchor assembly of claim 33 wherein said support device is threadedly received on said associated bolt.

51. (New) The bolt and anchor assembly of claim 33 wherein at least one of (1) said support device and (2) said shell includes a tapered surface adjacent the other one of said support device and said shell, said tapered surface facilitates said axial movement of said support device in said direction toward and relative to said shell.

52. (New) The bolt and anchor assembly of claim 51 wherein said support device includes a first tapered surface adjacent said shell and said shell includes a second, corresponding tapered surface adjacent said support device for cooperating with said first tapered surface.

53. (New) The bolt and anchor assembly of claim 33 wherein said axial movement of said support device in said direction toward and relative to said shell occurs only after at least one of (1) a predetermined force is applied on said shell by said support device and (2) a predetermined bolt torque is applied on said shell by said support device.

54. (New) The bolt and anchor assembly of claim 33 wherein a base ring of said shell partially expands without engaging the associated bore hole upon application of a sufficient force on a bottom radial end of said base ring by said support device that facilitates said axial movement of said support device in said direction toward and relative to said shell.

55. (New) The bolt and anchor assembly of claim 33 wherein a base ring of said shell includes a weakened area that facilitates said axial movement of said support device in said direction toward and relative to said shell to allow said support device to move through said base ring.

56. (New) The bolt and anchor assembly of claim 33 wherein a base ring of said shell includes at least one notch that facilitates said axial movement of said support device in said direction toward and relative to said shell to allow said support device to move through said base ring.

57. (New) The bolt and anchor assembly of claim 33 wherein a base ring of said shell includes at least one split that facilitates said axial movement of said support device in said direction toward and relative to said shell to allow said support device to move through said base ring.

58. (New) The bolt and anchor assembly of claim 57 wherein said axial movement of said support device in said direction toward and relative to said shell only occurs after a predetermined axial force of about 5,000 lbs. is applied on said shell by said support device.

59. (New) The expansion shell assembly of claim 33 wherein the support device comprises a threaded lower support threadedly engaged with the elongated bolt and an upper support for reducing the amount of torque transferred to the expansion shell during installation.

60. (New) The expansion shell assembly of claim 33 further comprising an antifriction washer adjacent a lower end of the support device for reducing the amount of torque transferred to the expansion shell during installation.

61. (New) The expansion shell assembly of claim 33 wherein at least a portion of the support device includes an antifriction coating to reduce the amount of torque transferred to the expansion shell during installation.

62. (New) The expansion shell assembly of claim 33 wherein the support device is positioned on an unthreaded portion of the roof bolt between a threaded portion of the roof bolt and a shoulder of the roof bolt prior to threads being rolled on the threaded portion to generally restrict axial movement of the support device.

63. (New) The expansion shell assembly of claim 33 wherein the support device is unthreaded and slidably received on the bolt between a shoulder of the bolt and a distal end of the bolt inserted into the associated bore hole.

64. (New) The bolt and anchor assembly of claim 33 wherein the support device is formed integrally with the elongated bolt.

65. (New) The expansion shell assembly of claim 43 wherein said expansion shell includes a base ring that is in contact with said shell support, said base ring including a weakened area for facilitating movement of said support device through said base ring of said shell.

66. (New) The expansion shell assembly of claim 65 wherein said weakened area is one of a notch and a slit.

67. (New) The method of claim 46 wherein said step of rotating said mine roof bolt to anchor said expansion shell assembly including the sub-steps of:
forcing said support device against said expansion shell;
forcing said expansion shell against said support device; and
forcing all fingers of said expansion shell to move radially outwardly to grip said rock formation.

68. (New) The method of claim 46 wherein said step of further rotating said mine roof bolt includes the sub-steps of:
forcing said support device axially into said expansion shell; and
diametrically expanding a base ring of said expansion shell to allow said support device to move axially into and through said base ring of said expansion shell.

69. (New) The method of claim 46 further including the step of rotating said mine roof bolt to move said expansion shell assembly axially along the mine roof bolt in a direction away from a distal end of the mine roof bolt prior to said step of rotating said mine roof bolt to anchor said expansion shell assembly in said drilled hole.

70. (New) The expansion shell assembly of claim 43 wherein said shell support is threadedly engaged with said elongated bolt.